

REPRODUCTION IN ORGANISM (ANIMALS)

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- ✓ Reproduction – biological process in which an organism gives rise to young ones (offspring) similar to itself
- ✓ It is a means of perpetuation
- ✓ Enables continuity of species, generation after generation
- ✓ Life span – period from birth to natural death of an organism, character of species
- ✓ Life expectancy (average life span) - character of population, increasing due to decreasing mortality rate
- ✓ In India – 67 years
- ✓ Life spans of some organisms



Elephant(_____)



Rose (_____)



Dog (_____)



Butter fly (1-2 weeks)



Crow (15 years)



Banana tree (_____)



Cow (_____)



Parrot (140 years)



Crocodile (60 years)



Horse (_____)



Fruit fly (_____)



Rice plant (_____)



Tortoise (100-150 years)



Banyan tree (_____)

Figure 1.1 Approximate life spans of some organisms

Life span of some organisms –

- | | | |
|----------------|---|-------------|
| 1. Elephant | - | 70 yr. |
| 2. Rose | - | 5-7 yr. |
| 3. Dog | - | 20-25 yr. |
| 4. Banana tree | - | 25 yr. |
| 5. Cow | - | 25 yr. |
| 6. Horse | - | 50-60yr. |
| 7. Fruit Fly | - | 1 month |
| 8. Rice plant | - | 4 months |
| 9. Banyan tree | - | 200-400 yr. |

Stages of life span –

1. Birth
2. Juvenile phase – non- reproducing growing phase, called vegetative phase in plants
3. Reproductive phase
4. Ageing
5. Senescence/old age – changes like slowing of metabolism etc
6. Death- Inevitable except single celled organisms reproducing by binary fission (immortal)
 - ✓ Life span of organisms are not correlated with their sizes e.g.-crows and parrots, mango and peepal tree

Basic features of reproduction-

1. DNA replication
2. Cell division
3. Growth of cell protoplasm
4. Formation of reproductive units
5. Formation of new individual

Note:- Hydra – interstitial cells (totipotent)

Planaria – neoblast cells

Sponges – archaeocyte

Types of Reproduction

Key Events

- Meiosis
- Fertilization

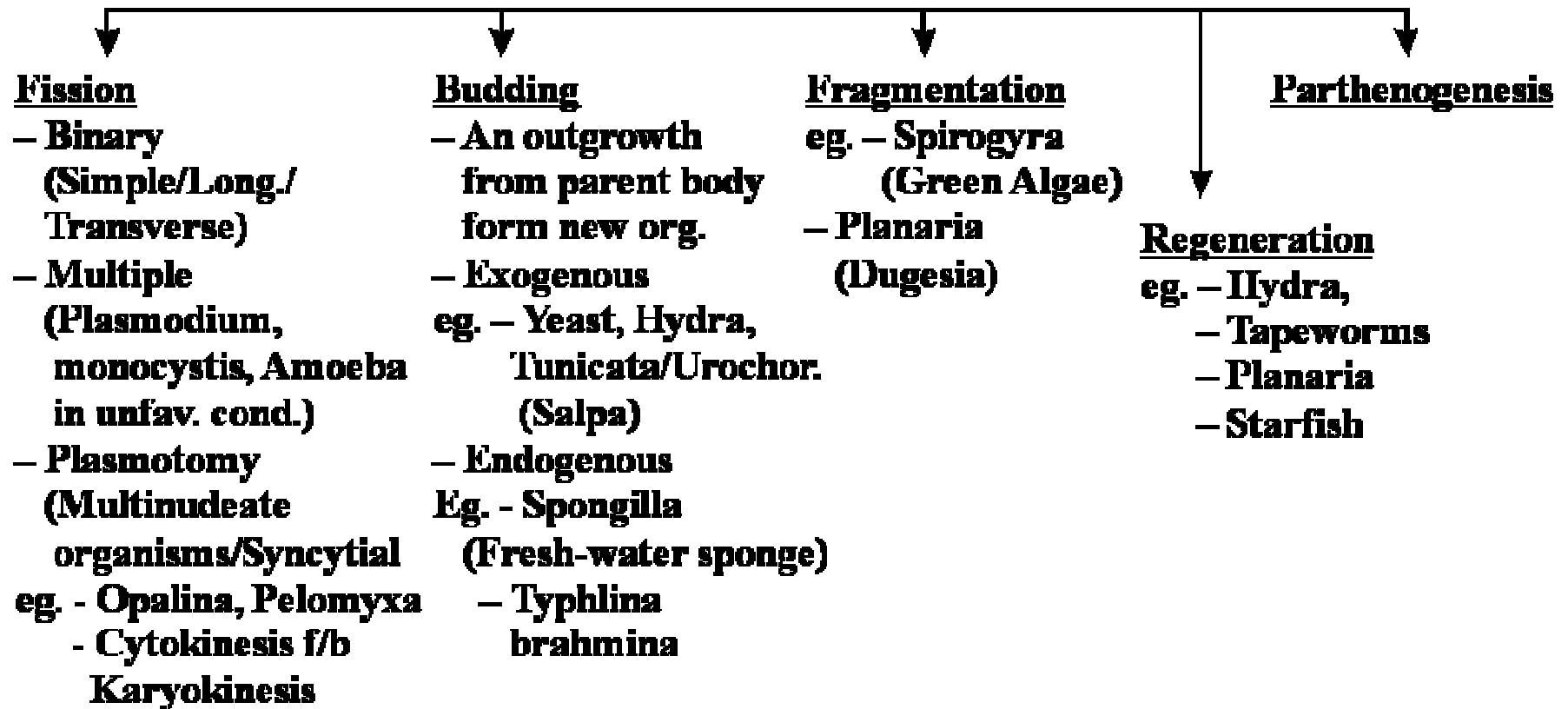
Asexual

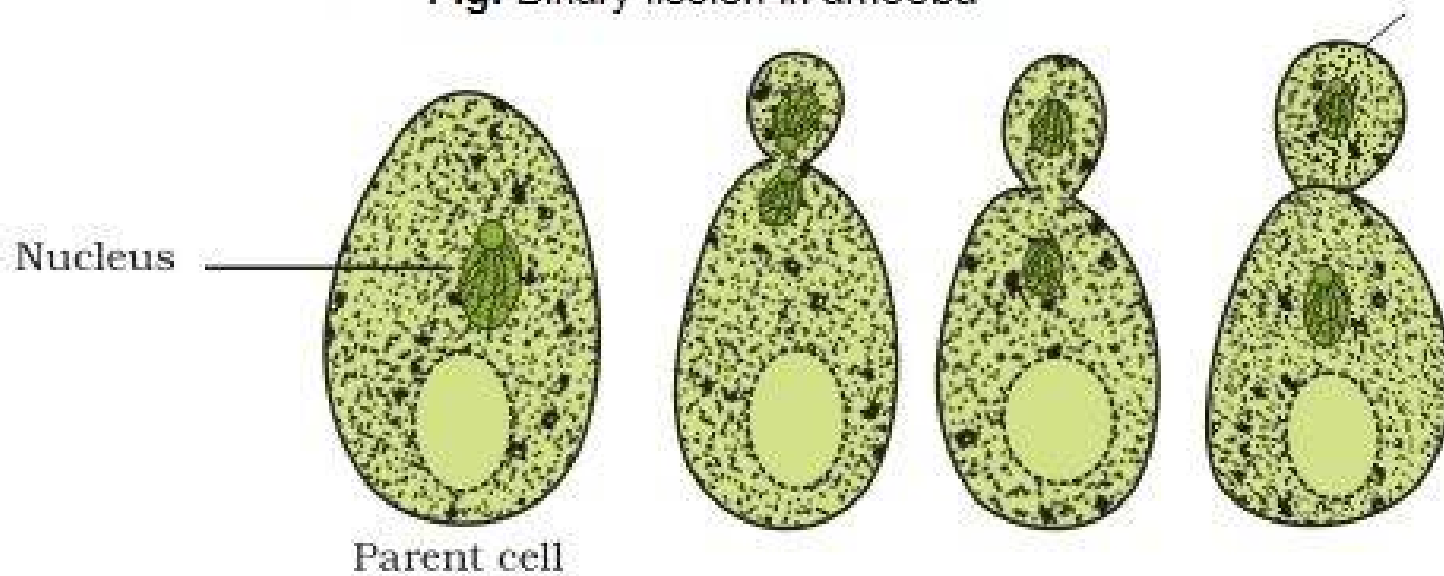
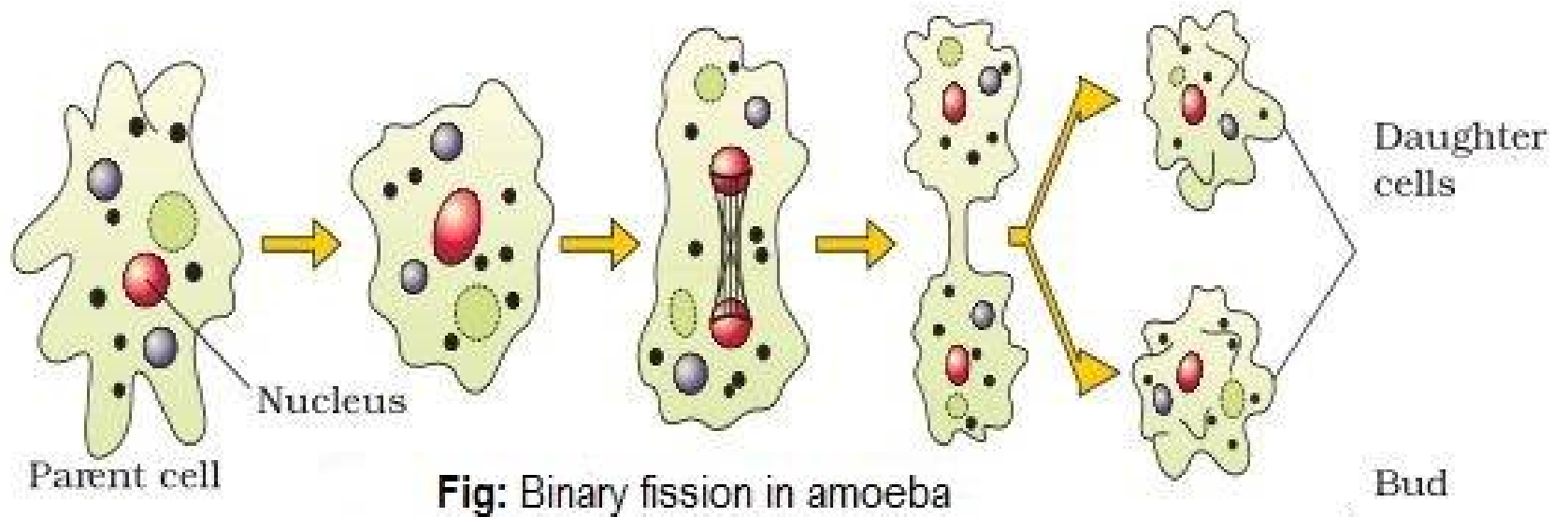
- Agamogeny/Agamogenesis/
Somatogenesis
- Uniparental
- Gametes may form but no fertilization
- Only mitosis, No. meiosis
- Offsprings morphologically & Genetically Identical to parents & each other (clones)
- No variations
- No Role in Evolution
- Simple & Fast process
- In Fav. Conditions

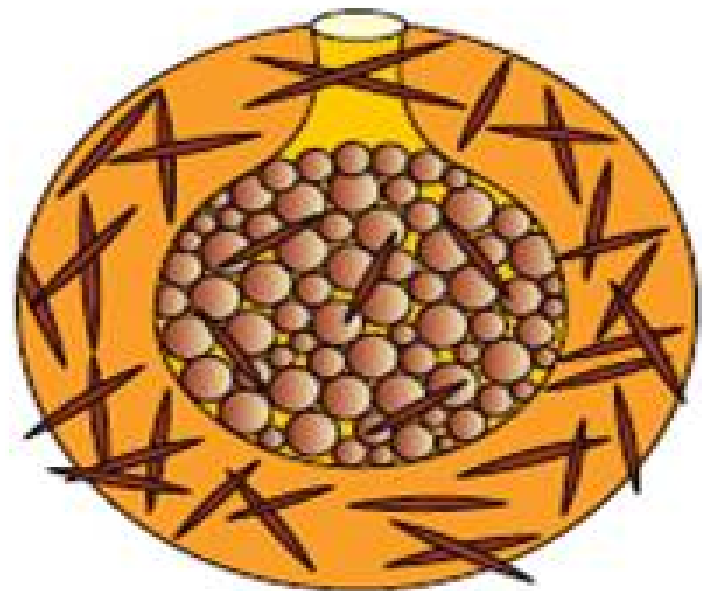
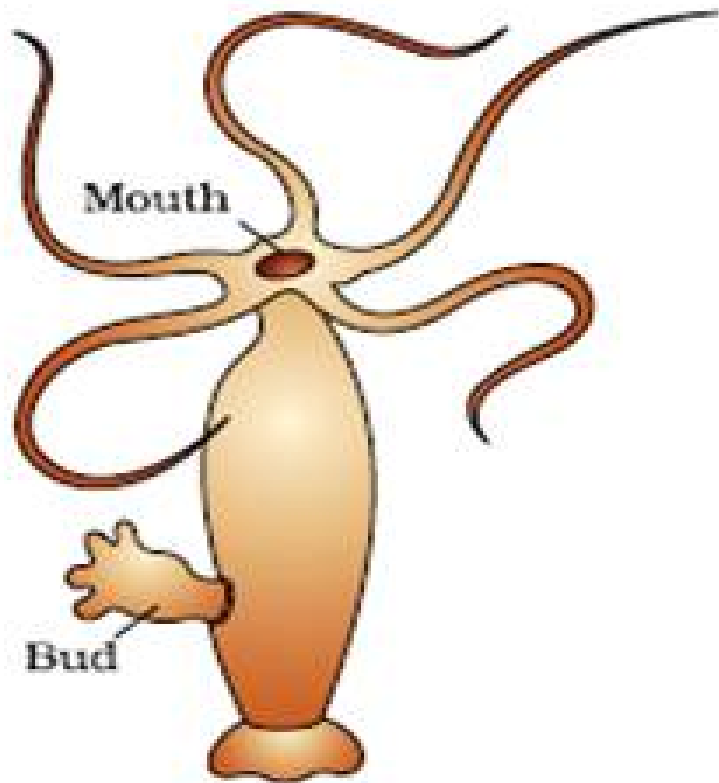
Sexual

- Amphimixis
- Always biparental
- Gametes formed & fused by fertilization
- Mitosis & meiosis both occurs
-
- Variations occur
- Role in Evolution
- Complicated & slow process
- In unfav. conditions

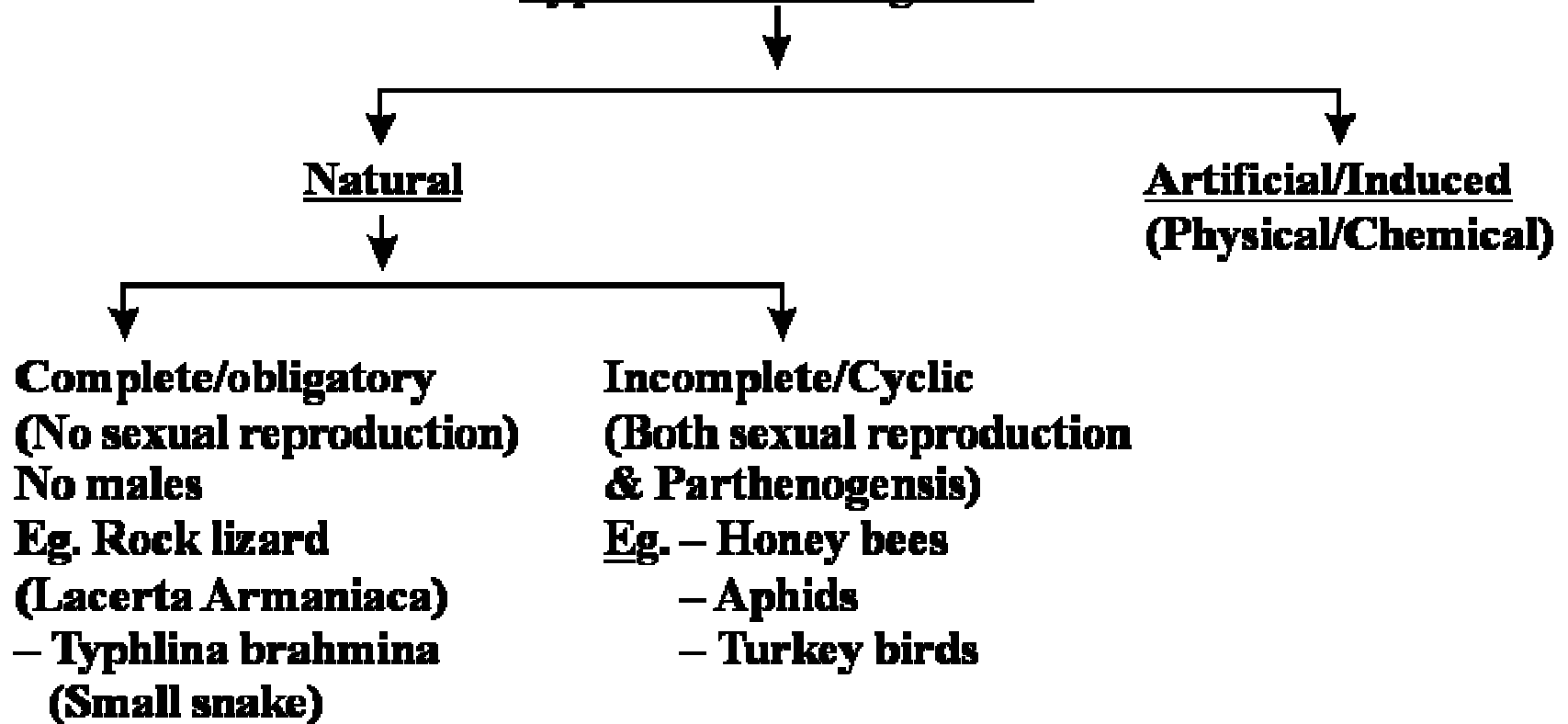
Types of Asexual Reproduction



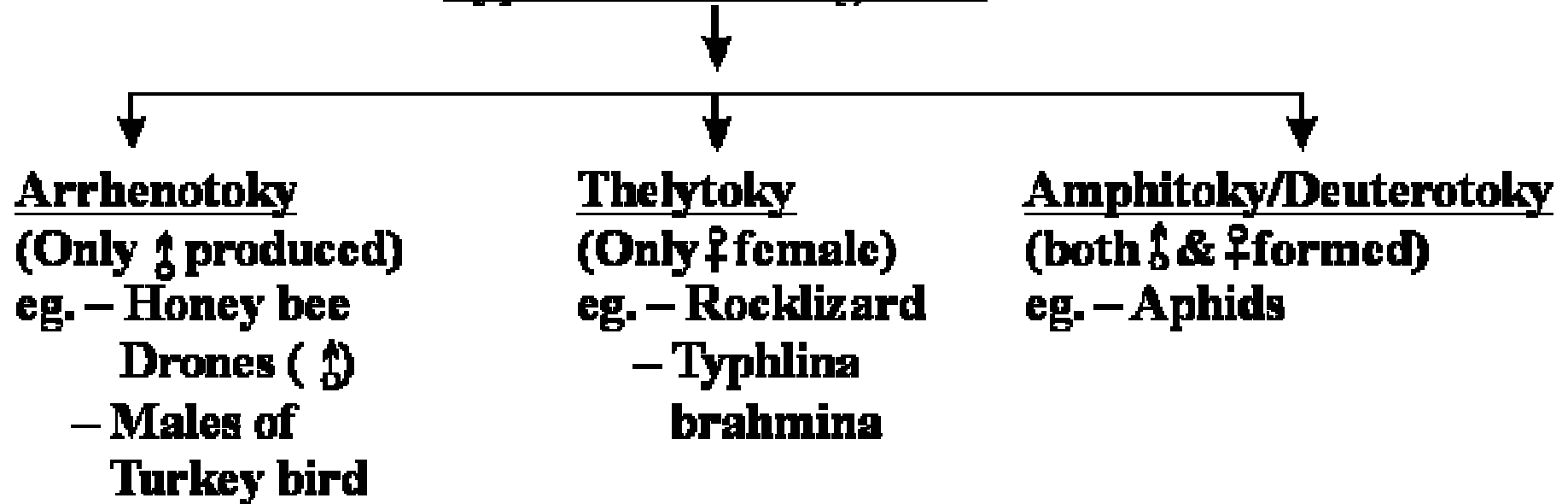




Types of Parthenogenesis



Types of Parthenogenesis



➤ **Parthenogenesis – virgin birth**

- ✓ A type of asexual reproduction
- ✓ Formation of embryo/new individual from unfertilized egg/ ovum.

Note:- Honeybee

- ✓ Males – produced by parthenogenesis
- ✓ Females (queen and worker bees) - produced by sexual reproduction
- ✓ Males – haploid
- ✓ Females- diploid
- ✓ Male – produce sperms by mitosis
- ✓ Queen bee – produce eggs by meiosis
- ✓ Worker bee – sterile

Sexual reproduction:

- ✓ 2 key events – meiosis (for gamete formation), fertilization (for zygote formation)

1. Pre-fertilization events – gametogenesis and gamete transfer

- ✓ Gametogenesis – formation of 2 types of gametes – male and female (haploid cells)
 1. Homogamete /isogamete – e.g. monocystis
 2. Heterogamete (oogamy) – sperm and ovum/egg
- ✓ Unisexual animal – e.g. vertebrates, cockroach etc
- ✓ Bisexual /hermaphrodites – e.g. sponge, tapeworm, leach, earthworms etc
- ✓ Transfer of gamete

2. Fertilization/syngamy – fusion of gametes

- ✓ External – e.g. frogs, bony fishes etc.
- ✓ Disadvantage – offsprings are extremely vulnerable to predators, threatening their survival upto adulthood
- ✓ Internal – e.g. reptiles, birds, mammals etc
- ✓ Male gamete is motile and reach egg to fuse with it
- ✓ Number of sperms produced very large, significant reduction in number of eggs produced

3. Post- fertilization events (after zygote formation):
- ✓ Zygote – diploid, universal in all sexually reproducing organisms
 - ✓ Vital link that insures continuity of species between organisms of one generation and the next
 - ✓ Every sexually reproducing organism, begins life as a single cell – zygote
 - ✓ Cleavage
 - ✓ Embryogenesis – development of embryo from zygote (cell division, mitosis and cell differentiation)

On Basis of Devel of Embryo



Oviparous

- lay unfertilized eggs (Ext. rest)
eg. : Amphibians
- Lay fertilized eggs with egg yolk, covered by hard calcareous shell
eg. : Birds, Reptiles

Viviparous

- birth to mature young ones nutrition through placenta
eg. : True placental mammals

Ovo-viviparous

- birth to immature young ones
- Marsupials
- Rattle snakes (Viper snake)
- Sharks (some)